



RESEARCH ARTICLE

COMPARISON BETWEEN EFFICACY OF HIORA-GA GEL AND CHLORHEXIDINE DIGLUCONATE GEL
IN MANAGEMENT OF PATIENTS WITH GINGIVITIS

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ABSTRACT

Objective: To compare the efficacy of HiOra-GA gel with that of Hexigel for the management of patients with gingivitis.

Methods: 60 patients of either sex aged more than 18 years and who are enrolled with diagnosis of gingivitis will be included in the study under 2 groups of 30 patients each and consecutive sampling will be done for the recruitment of patients. Group I patients will be given HiOra-GA gel and Group II patients will be given Hexigel which are to be taken over the index finger and applied over the gums twice daily for a period of four weeks. Thus, the efficacy of HiOra-GA gel in gingivitis will be compared with that of Hexigel.

Results: On comparison of the mean differences between both the groups using unpaired t test a mean value of 1.187 ± 0.02 for group 1 and a mean value of 1.188 ± 0.01 for group 2 was found, with t value of 0.260 and is insignificant ($p > 0.05$).

Conclusion: It can be concluded that HiOra-GA gel and Hexigel are equally effective in the treatment of gingivitis. Further studies should be carried out with larger sample sizes and longer follow-ups to compare the efficacies of both the drugs.

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INTRODUCTION

Gingivitis is the term that refers to the inflammation of the gingiva or the soft tissue of the oral cavity that immediately surrounds each individual tooth (Majumdar *et al.*, 2011). Under the classification system of the American Academy of Periodontology, gingivitis was defined as the inflammatory lesion confined to the tissues of the marginal gingiva and periodontitis was the term accepted to describe inflammatory lesions extending into the deeper tissues (Roy, 1986). The clinical presentation includes bleeding gums, bright red appearance of gingival tissue, gingiva which depicts tenderness to palpation, however painless yet swollen (Jeyaraj and Chithresan, 2010). The chief aggravating factor that causes inflammation of the gingival tissue is the occurrence of bacterial biofilm, also called dental plaque on the surfaces of teeth or on gingival interfaces (Majumdar *et al.*, 2011). Histopathologic examination of the inflamed gingival tissue depicts ulcerated surface epithelium.

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The repair of this ulcerated surface epithelium depends on the proliferative activity or the regenerative activity of the gingival epithelial cells. Even though plaque tends to be the primary causative agent to cause gingivitis, other factors can also contribute to the development of periodontal diseases (Carranza and Rapley, 2002). While the inflammation of the gingiva represents the predecessor to periodontitis it also represents a clinically obvious risk factor for the progression of the disease and eventually loss of teeth (Lang *et al.*, 2009). It has been shown that inflammation of the gingival tissue increases in severity and prevalence as age increases. The periodontal attachment loss almost always follows the inflammation of the gingiva, therefore, the ultimate aim of preventing the gingival tissue inflammation is to prevent the breakdown of the periodontal tissues, which is irreversible (Poulsen, 1981). However, gingivitis is a reversible disease (http://www.aapd.org/media/policies_guidelines/e_plaque.pdf). The goal of treatment for gingivitis is to remove the causative factors. Astringents cause shrinkage and contraction of tissues by constricting small blood vessels, water extraction from tissue or by protein extraction.

Since they possess fungicidal, anaesthetic, germicidal and healing properties, they are used for the treatment of gingival bleeding, oral stomatitis and inflammation (Gupta *et al.*, 2012). HiOra-GA gel which is a herbal product and contains extracts of Terminalia arjuna, Triphala and Pterocarpus marsupium and oils of Myristica fragrans, all of which are known to be soothing and possess healing properties of connective tissue including anti-microbial and anti-inflammatory properties. The useful effects of HiOra-GA are due to the additive effects of the potency of the individual herbs with their anti-inflammatory, antioxidant, wound healing, anti-bacterial, and analgesic properties. It quite effectively relieves symptoms of gingivitis like gingival swelling, gingival bleeding and halitosis with no adverse effects (Jeyaraj and Chithresan, 2010). Topical antiseptics also include chlorhexidine that has remained as one of the most effective agents reported till date and has been successfully used for the management of plaque-related gingivitis (Cosyn, 2005). Chlorhexidine digluconate gel is widely used at institutions and can be easily applied with toothbrushes or trays (Pannuti *et al.*, 2003). However, it is advised that the dentist must be well aware of the side effects of chlorhexidine. The early signs and symptoms of allergy may be mild but reapplication can cause a fatal reaction and therefore, even the mild early reactions should not be ignored (Keni *et al.*, 2012). Hence, in this study the efficacy of HiOra-GA gel in gingivitis will be compared with that of Hexigel for the management of patients with gingivitis.

Aim of the study

To compare the efficacy of Hiora-GA gel and Hexigel in the management of gingivitis.

Objective of the study

To compare the efficacy of Hiora-GA gel and Hexigel for the treatment of gingivitis using gingival index and VAS at 28 days

MATERIALS AND METHODS

60 patients of either sex aged more than 18 years and who are enrolled with diagnosis of gingivitis reporting to Dr. D. Y. Patil Dental College & Hospital Pimpri Pune will be included in the study under 2 groups of 30 patients each. Consecutive sampling will be done for the recruitment of patients. Following establishment of diagnosis, each patient of both the groups will be informed about the condition, a detailed case history with details of duration of gingivitis will be taken. All patients will be motivated towards recovery. Each patient will be screened for diagnosis and inclusion, will be advised to use modified bass technique using a fluoridated toothpaste and examined for four weeks. Group I patients will be given HiOra-GA gel (Himalaya Herbal Health care, Bangalore India) and Group II patients will be given Hexigel (ICPA Health products Ltd. India) which are to be taken over the index finger and to be applied over the gums twice a day for a period of 28 days. Statistical methods used to compare the gingival index scores within the same groups was done by ANOVA test* and comparison between indices of both the groups was done by unpaired t test**

* p <0.001 – highly significant

** p>0.05 – insignificant

RESULTS

Table 1. Comparison of the gingival index scores [Initial (Day0), mid (Day 14) & Final (Day 28)] in group 1 (HiOra-GA) using ANOVA test

Index scores	No of participants	Mean (SD)
Initial	30	1.80 (0.01)
Mid	30	1.24 (0.01)
Final	30	0.61 (0.01)
F value	-	61470.260
p value	-	<0.001**

On comparison of the index scores of 30 patients in group 1 using ANOVA test revealed highly significant reduction in gingivitis from day 0 to day 28 (p<0.001)

Table 2. Comparison of the gingival index scores [Initial (Day0), mid (Day 14) & Final (Day 28)] in group 2 (Hexigel) using ANOVA test

Index scores	No of participants	Mean (SD)
Initial	30	1.79 (0.01)
Mid	30	1.24 (0.01)
Final	30	0.61 (0.01)
F value	-	58443.473
p value	-	<0.001**

On comparison of the initial, mid and final index scores in group 2 patients using ANOVA test revealed highly significant reduction in gingivitis (p<0.001)

Table 3. Comparison of the Initial (Day 0) gingival index scores in both the groups using unpaired t test

Initial index scores	No of participants	Mean (SD)
Group 1	30	1.80 (0.01)
Group 2	30	1.79 (0.01)
t value	-	0.354
P value	-	0.725

Comparison of the initial index scores of day 0 of both groups using unpaired t test revealed to be insignificant (p>0.05).

Table 4. Comparison of the Mid (Day 14) gingival index scores in both the groups using unpaired t test

Mid index scores	No of participants	Mean (SD)
Group 1	30	1.24 (0.01)
Group 2	30	1.24 (0.01)
t value	-	0
P value	-	1

Comparison of the mid index scores of day 14 of both the groups using unpaired t test revealed to be insignificant (p>0.05)

Table 5. Comparison of the Final (Day 28) gingival index scores in both the groups using unpaired t test

Final index scores	No of participants	Mean (SD)
Group 1	30	0.613 (0.01)
Group 2	30	0.610 (0.01)
t value	-	0.720
P value	-	0.474

Comparison of the final index scores of day 28 in both the groups using unpaired t test revealed to be insignificant ($p>0.05$)

Table 6. Comparison of the Mean difference (Initial gingival index scores - Final gingival index scores) in both the groups using unpaired t test

Mean difference	No of participants	Mean (SD)
Group 1	30	1.187 (0.02)
Group 2	30	1.188 (0.01)
t value	-	0.260
P value	-	0.796

Comparison of the mean differences between both the groups using unpaired t test revealed to be insignificant ($p>0.05$)

On comparison of the index scores of 30 patients in group 1 using ANOVA test revealed initial index scores (Day 0) with mean 1.80 ± 0.01 , mid index scores (Day 14) with mean 1.24 ± 0.01 and final index scores (Day 28) with mean 0.61 ± 0.01 , resulting in highly significant reduction in gingivitis from day 0 to day 28 ($p<0.001$). On comparison of the initial, mid and final index scores in group 2 patients using ANOVA test revealed mean values of initial index score (Day 0) of 1.79 ± 0.01 , mid index score (Day 14) of 1.24 ± 0.01 and final index score (Day 28) of 0.61 ± 0.01 denoting highly significant reduction in gingivitis ($p<0.001$).

On comparison of the initial index scores of day 0 of both groups using unpaired t test showed a mean value of 1.80 ± 0.01 in case of group 1 and 1.79 ± 0.01 in case of group 2 and t value of 0.354 and is insignificant ($p>0.05$). On comparison of the mid index scores of day 14 of both the groups using unpaired t test revealed a mean value of 1.24 ± 0.01 in group 1 and 1.24 ± 0.01 in group 2 and is insignificant ($p>0.05$). On comparison of the final index scores of day 28 in both the groups using unpaired t test revealed a mean value of 0.613 ± 0.01 for group 1 and a mean value of 0.610 ± 0.01 for group 2 and a t value of 0.720 and is insignificant ($p>0.05$). On comparison of the mean differences between both the groups using unpaired t test revealed a mean value of 1.187 ± 0.02 for group 1 and a mean value of 1.188 ± 0.01 for group 2, with t value of 0.260 and is insignificant ($p>0.05$). The assessment of pain in this study using VAS scale could not be applied as the initial to final scores had been nil for all the patients from day 0 to day 28 making it insignificant for this study.

DISCUSSION

In our study a significant reduction in gingivitis has been found in almost all the patients using HiOra-GA gel and Hexigel. In group 1 patients who have been using HiOra-GA gel the initial mean value of 1.80 and a final value of 0.61 was found which showed the results were highly significant and that the drug was effective in the treatment of gingivitis. A similar study has been conducted by Jeyaraj *et al.* (2010) which was a randomized, double blind, placebo controlled study which showed significant reduction in the gingival swelling and bleeding, also tenderness and halitosis with the usage of HiOra-GA gum astringent.

In group 2 patients who had been given Hexigel the initial and final mean values were found to be 1.79 and 0.61 respectively which showed highly significant results and hence, it proved to be effective as well. In a study conducted by Machado *et al.* (2011) to evaluate the efficacy of chlorhexidine to control gingivitis and Candida species in children infected with the human immunodeficiency virus showed that there was a considerable decrease in gingivitis and in the number of Candida species after brushing at home with chlorhexidine gel two times a day for 21 days. In a comparative study conducted by Mirzadeh *et al.* (2014) on the efficacy of 0.2% chlorhexidine mouthwash and 0.2% chlorhexidine digluconate gel on gingivitis and accumulation of plaque using Gingival Index (Loe and Silness, 1967), Bleeding Point Index (Lenox, 1973), Plaque Control Record (O'Leary Index, 1972) it had been proven that there were statistically insignificant differences between two methods of chlorhexidine administration. Therefore, in case of the usage of individual drugs the results of our study are reasonably in keeping with the results of other studies done earlier suggesting the oral formulations of the drugs are safe and effective for gingivitis. When the results of group 1 and group 2 are compared there were mean values of 1.187 and 1.188 respectively which no significant difference, thereby denoting both the drugs to be equally effective for the treatment of gingivitis.

Conclusion

From this study it can be concluded that HiOra-GA gel and Hexigel are equally effective in the treatment of gingivitis. Further studies should be carried out with larger sample sizes and longer follow-ups to compare the efficacies of both the drugs.

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